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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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SEED INTELLECTUAL PROPERTY LAW GROUP PLLC
701 FIFTH AVE
SUITE 6300
SEATTLE, WA 98104-7092

EXAMINER

HUBER, JEREMIAH C

ART UNIT

PAPER NUMBER

2613

DATE MAILED: 10/05/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/980,443

Applicant(s)

OH ET AL.

Examiner

Jeremiah C. Huber

Art Unit

2613

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 May 1999 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 12/1/2002.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-5,7-8 and 10-11 are rejected under 35 U.S.C. 102(b) as being anticipated by Wang et al (5557684).

In regard to claim 1, Wang discloses a method for motion estimation used in encoding video that includes: selecting a group of related data blocks from the picture (Wang col. 8 line 10), obtaining corresponding motion vectors from a previously processed picture (Wang col. 10 line 51), determining a primary motion vector for the group from all of the corresponding block motion vectors (Wang col. 8 line 45), classifying the block motion vectors from the selected group into a plurality of sub-groups (Wang col. 9 line 7), determining a plurality of secondary global motion vectors corresponding to the respective sub-groups (Wang col. 8 line 62), and selecting global motion vectors for use in defining one or more search windows for each block in the selected group to enable matching with a reference picture (Wang col. 10 line 42, and Fig 6B 'V₀').

In regard to claim 2 refer to the arguments made in the rejection of claim 1 above, Wang further discloses the use of spatial clustering to classify block motion vectors(Wang col. 9 line 7).

In regard to claim 3, refer to the arguments made in the rejection of claim 1 above, Wang further discloses the use of the affine transform to generate an average motion vector for each block (Wang col. 9 line 45).

In regard to claim 4, refer to the arguments made in the rejection of claim 1 above, Wang further discloses matching each of the selected blocks from the current picture to a matching block in the reference picture and determining a motion vector between the current block and its matching reference block (Wang col. 7 line 13)

In regard to claim 5, refer to the arguments made in the rejection of claim 1 above, it is noted that Wang does not explicitly disclose storing the calculated motion vectors, however such storage is implied by the use of the motion vectors for processing the next frame (Wang col. 10 line 51).

In regard to claim 7 refer to the arguments made in the rejection of claim 1 above, Wang further discloses the selection of one of a plurality of search schemes based on selected characteristics of the global motion vectors (Wang col. 10 line 42, and Fig 6B 'V₀').

In regard to claim 8 refer to the arguments made in the rejection of claim 1 above, Wang further discloses analysis of global motion vectors to determine metric representing a distribution pattern and selecting a motion estimator scheme on the basis of the distribution pattern (Wang col. 8 line 47).

In regard to claim 10 refer to the arguments made in the rejection of claims 1 and 8 above.

In regard to claim 11 refer to the arguments made in the rejection of claims 1 and 8 above, Wang further discloses the use of multiple motion estimators (Wang Fig. 6B).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 6 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wang in view of Yagasaki et al (5428396).

Wang discloses a motion estimation method as argued in the rejection of claims 1-5, 7-8 and 10-11 above. It is noted that Wang does not specifically disclose variable length coding (VLC) of the motion vectors, and further does not disclose selecting a VLC level based upon the maximum motion vector. However, Yagasaki discloses a method VLC for motion vectors that adapts to optimally fit a given range of motion vectors (Yagasaki col. 8 line 26 and col. 9 line 8). It is therefore considered obvious that one of ordinary skill in the art at the time of the invention would recognize the advantage of including in Wang a VLC coding method as taught by Yagasaki in order to reduce the bandwidth necessary for computation and transmission.

5. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wang in view of Mizuno et al (6249550).

Wang discloses a motion estimation method as argued in the rejection of claims 1-5,7-8 and 10-11 above. It is noted that Wang does not specifically disclose using global motion vectors to determine the maximum search range. However, Mizuno discloses a method and apparatus for motion estimation wherein the search range is determined based on motion history (Mizuno col.9 line 6). It is therefore considered obvious that one of ordinary skill in the art at the time of the invention would recognize the advantage of including in Wang a search range sizing method as taught by Mizuno in order to achieve faster, more accurate searching.

6. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wang in view of Yagasaki as applied to claims 6 and 9 above, and further in view of Mizuno.

The modification of Wang in view of Yagasaki does not specifically include determining a maximum search range based upon global motion vectors. However, Mizuno discloses a method and apparatus for motion estimation as described above in the rejection of claim 12. It is therefore considered obvious that one of ordinary skill in the art at the time of the invention would recognize the advantage of further modifying Wang in view of Yagasaki to include the search range sizing method as taught by Mizuno in order to achieve faster, more accurate searching.


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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeremiah C. Huber whose telephone number is (571)272-5248. The examiner can normally be reached on Mon-Fri 8:00 a.m. - 4:30 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mehrdad Dastouri can be reached on (571)272-7418. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jeremiah C Huber
Examiner
Art Unit 2613



YOUNG LEE
PRIMARY EXAMINER